AMENDMENT TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) An implantable bioelectric signal processing system comprising:

an interface configured to receive an analog bioelectric signal from at least one electrode implanted in said living organism;

a sigma-delta (Σ-Δ) analog-to-digital converter to convert [[the]] said analog bioelectric signal into a 1-bit data stream;

a transceiver coupled to said Σ-Δ analog-to-digital converter, said transceiver configured to communicate said 1-bit data stream to a remote processing system over a wireless communications link;

wherein said 1-bit data is representative of the received analog bioelectric signal, which is further filtered and processed in an external processor to extract information about the received signal;

an antenna coupled to a capacitor circuit, for receiving and storing power which is transmitted wirelessly from an external source, said capacitor circuit and antenna configured to indirectly stimulate the process of signal reception from said at least one electrode in response to [[the]] said transmitted power.

2. (Previously Presented) The implantable bioelectric signal processing system of claim 1 wherein said interface, said Σ-Δ analog-to-digital converter, and said transceiver are disposed within a common matrix configured for implantation within an organism.

3. (Previously Presented) The implantable bioelectric signal processing system of claim 1 wherein said antenna receives power via RF emission from an electrical winding disposed in proximity to said antenna, said electrical winding configured to receive a controlled flow of electrical current from an external power source to generate an electromagnetic field.

4. (Currently Amended) The implantable bioelectric signal processing system of claim 3 wherein flow of electric current to [[the]] said electrical winding is controlled by an external signal processing system;

and wherein the external signal processing system triggers [[the]] said implantable system wirelessly, via the controlled flow of electric current to the electrical winding, to start receiving bioelectric signals from said organism through at least one implantable electrode disposed within said organism.

5. (Canceled)

6. (Currently Amended) The implantable bioelectric signal processing system of claim 1 wherein said interface, said ~~signal sampling circuit~~ Σ-Δ analog-to-digital converter, and said transceiver are implemented on a single integrated circuit.

7. (Previously Presented) The implantable bioelectric signal processing system of claim 6 wherein said single integrated circuit utilizes Very Large Scale Integrated circuit architecture.

8. (Previously Presented) The implantable bioelectric signal processing system of claim 1 wherein said interface includes a signal amplification component for amplifying said received analog bioelectric signal.

9-11. (Canceled)

12. (Previously Presented) A biological organism data acquisition system including:

an implantable logic circuit configured for implantation in an organism;

an electrical winding disposed in proximity to said organism, said electrical winding configured to receive a controlled flow of electrical current from an electrical power source and to generate an electromagnetic field;

an external signal processing system operatively coupled to said implantable logic circuit via a wireless interface, said external signal processing system configured to control a flow of electrical power to said implantable logic circuit through said electrical winding and generated electromagnetic field via an air interface;

wherein said implantable logic circuit is coupled to receive analog bioelectric signals from said organism through at least one implantable electrode disposed

within said organism, and to communicate data associated with said analog bioelectric signals to said external signal processing system via a wireless communications link; and

further including an organism containment cage, said electrical winding disposed in proximity to said organism containment cage to generate an electromagnetic field within said organism containment responsive to said controlled flow of electrical current from said electrical power source.

13. (Previously Presented) A method for acquiring bio-electric signals from an organism, the method comprising the steps of: implanting at least one electrode in the organism, said electrode configured to acquire at least one bio-electric signal;

implanting a logic circuit in the organism, said implanted logic circuit coupled to said electrode to receive said acquired bio-electric signal;

providing electrical power to said implanted logic circuit from an external power source using wireless energy transfer;

receiving, responsive to said provided power, said at least one bio-electric signal at said logic circuit from said implanted electrode; and

communicating a 1-bit data stream representative of said received bio-electric signal from said implanted logic circuit to an external data processor via a wireless communications link.

14. (Previously presented) The method of claim 13 further including the step of converting said received bio-electric signals from analog to digital form in said implanted logic circuit, prior to said communicating step.

15. (Previously presented) The method of claim 14 wherein said step of converting includes processing said received bio-electric signal through a sigma-delta analog to digital converter.

16. (Previously presented) The method of claim 13 wherein said at least one electrode is implanted to acquire at least one brain activity bio-electric signal in the organism.

17. (Previously presented) The method of claim 13 wherein said received bio-electric signal is a continuous bio-electric signal.

18. (Previously presented) The method of claim 13 wherein said received bio-electric signal is an evoked bio-electric signal.

19. (Previously presented) The method of claim 13 wherein said step of providing electrical power to said implanted logic circuit includes transferring electrical power from said external power source to said implanted logic circuit over a wireless interface.

20. (Previously presented) The method of claim 13 wherein said step of providing electrical power to said implanted logic circuit includes generating an electro-magnetic field with said external power source; disposing said implanted logic circuit

within said electromagnetic field; and extracting electrical power from said electromagnetic field at said implanted logic circuit.